



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/688,994

10/21/2003

Hiroyuki Yoshida

LB-4255-5

4547

23117 7590 02/18/2010
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

TRINH, THANH TRUC

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

02/18/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/688,994	Applicant(s) YOSHIDA ET AL.	
	Examiner THANH-TRUC TRINH	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/12/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As newly added, claim 20 depends on claim 1 and recites the limitation "wherein when the edge face sealing member is captured within the frame body while the solar cell module is captured within the edge face sealing member along an entire edge portion perimeter thereof, an entire surface of the upper sealing region, the lower sealing region and the side sealing region which faces the solar cell module is coming into intimate contact with the entire edge portion perimeter of the solar cell module body" (emphasis added). There is no support for of this limitation in the originally filed disclosure. Instead, Applicant discloses there are tip portions and projections in bending position and being pressed against the surfaces of solar cell module to form intimate contact (see Applicant's figures 3a-b). In such position, there is in no way the entire surface of the upper sealing region, the lower sealing region and the side sealing region which faces the solar cell module is coming into intimate contact with the entire edge portion

Art Unit: 1795

perimeter of the solar cell module body. There is also no description in the originally filed disclosure that would reasonably convey to the artisan that the inventor had possession at the time the invention was made.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As newly added, claim 20 depends on claim 1 and recites the limitation "wherein when the edge face sealing member is captured within the frame body while the solar cell module is captured within the edge face sealing member along an entire edge portion perimeter thereof, an entire surface of the upper sealing region, the lower sealing region and the side sealing region which faces the solar cell module is coming into intimate contact with the entire edge portion perimeter of the solar cell module body" (emphasis added). It is unclear exactly what surface is referring to as there are many surfaces included in the upper sealing region, the lower sealing region, and the side sealing region which faces the solar cell module.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1795

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 4-6, 14, 16-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080)

Regarding claims 1, 4, 14, and 20, as seen in figures 1-7, Ishikawa et al. discloses a solar module having an edge face sealing member (see grading

Art Unit: 1795

channel members 5 surrounding the solar cell panel 4 in Figures 2-3 and 5-6) for sealing between solar cell module body (e.g. solar cell battery panel 4) and frame body (e.g. frame 3 including upper, lower and vertical frame members 6, 7 and 8, see abstract and Figures 4-5) when the solar cell module body is capture within the frame body (see Figure 5). The edge face sealing member is an integral frame-like shape (see grading channel members 5 in Figure 5) is formed along an outer shape of the solar cell module body (e.g. the integral frame-like shape grading channel members 5 wrap around the solar cell module 4 as seen in Figure 5). The edge face sealing member (e.g. grading channel members 5) is substantially C-shaped in cross section or substantially U-shaped in cross section (See grading channel members 5 in Figures 2-3 and 6). The edge face sealing member (e.g. grading channel members 5) comprises an upper sealing region (e.g. upper side wall portion 10 of the grading channel members 5) abutting front surface of the solar cell module body; a lower sealing region (e.g. lower side wall portion 10 of the grading channel members 5) abutting back surface of the solar cell module body; a side sealing region (e.g. head portion 11 of the grading channel members 5) abutting edge faces of the solar cell module body. The upper sealing and the lower sealing regions of Ishikawa et al.'s edge face sealing member are disposed so as to open to the outside therefrom at either side from edge portions of the side sealing region (see Figures 1-3 and 6). Ishikawa et al. also discloses tip portions of the upper sealing region and the lower sealing region (or inner wall portions 9) are formed in a bent fashion so as to be inclined toward a groove recess, wherein the distance between the tip

Art Unit: 1795

portions is substantially the same as a thickness of the edge portion of the solar cell module body (see figures 1-3, 5-6). Ishikawa et al. also teaches the frame (6, 7 and 8) mounted on the grading channel 5 (or edge face sealing member as seen in figure 5, col. 4 lines 13-22, 55-61), inner surfaces of the upper and lower sealing regions (or side wall portions 10) facing each other, and a pair of tongue portions (or one projection from each inner surface of the upper and lower side wall portions 10 - upper and lower sealing regions - See Figures 1-6, col. 4 lines 29-32) extending inwardly, wherein the grading channel members 5 (or the edge face sealing member) is fitted on the solar battery 4 (or solar module body) by having its inner surface of the head portion 11 (or edge sealing portion) in contact with the edge of the solar battery 4, inner wall portion 9 held pushed against and in close contact with solar battery 4, and tongues 12 are elastically deformed to have close contact with the solar battery 4 (see col. 4 lines 44-54). While showing the tip portions and projections of the edge face sealing member in Figures 1-3, Ishikawa et al. does not specifically disclose an intimate contact of the solar cell module and the edge face sealing member. However, in addition to the teaching of tongues 12 being elastically deformed, and having their edges (e.g. edges of the tongues) in close contact with the solar battery 4 (See col. 4 lines 51-54), Ishikawa et al. also shows there is substantially no gap between the upper and lower sealing regions of the edge face sealing member (or the upper and lower side wall portion of the grading channel members 5) and the solar cell body 4 as seen in figures 6-7, or the edge face sealing member is in intimate contact with the solar cell module body; therefore it would have been obvious to

Art Unit: 1795

one skilled in the art at the time the invention was made to modify the frame body of the solar cell module of Ishikawa et al so that when the edge face sealing member is captured by the groove of the frame body, the upper sealing region and the lower sealing region are pressed against the solar cell module and coming in intimate contact with the front and back surface of the solar cell module, and the sealing completely seals the solar cell module body with substantially no gap between one or more upper and lower sealing regions of the edge face sealing member and the one or more front and back surfaces of at least one of the solar cell module body or bodies, respectively, as shown in Figure 6, because such is clearly within the scope of Ishikawa et al's disclosure.

Regarding claim 5, Ishikawa et al. teaches the projections (or tongues) comprises one single-rib. (See Figures 1-3)

Regarding claim 6, Ishikawa et al. teaches the tip portions of the lower and upper sealing regions are disposed in inclined fashion at respectively facing sealing region surfaces. (See Figures 1-3)

Regarding claims 16-17, Ishikawa et al. teaches the edge portions of the side sealing region are curved, cut diagonally so as to produce chamfered surfaces. (See Figures 1-3).

The difference between Ishikawa et al. and instant claims is that Ishikawa et al. does not explicitly teach having the frame-like edge face sealing member (e.g. the grading channel members 5) sealing the entire edge portion perimeter of the solar cell module body (e.g. the rectangular panel-shape solar battery 4).

Meadows teaches a frame-like member (e.g. frame member) having lips or ribs (e.g. lip portions and projections) to provide sealing the entire edge portion perimeter of a rectangular panel-shape body (e.g. glass pane 27, see Figures 1-4).

It would have been obvious to one skilled in the art at the time the invention was made to have the edge face sealing member (or the grading channel members 5) of Ishikawa et al. sealing the entire edge portion perimeter of the solar cell module body (e.g. rectangular panel shape body) as taught by Meadows, because Meadows teaches such sealing could be readily applied to the panel members and prevent the entrance of foreign substances such as air, water, or other fluid (See col. 1 lines 33-42, col. 3 lines 27-39). Such modification would have involved a mere substitution of known equivalent structures (sealing versus a sealing entire perimeter). A substitution of known equivalent structures is generally recognized as being within the level of ordinary skill in the art.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080) as applied to claims 1, 4-6, 14, 16-17 and 20 above, in further in view of either Stein et al. (US Patent 5071491) or Yoshida et al. (JP2000-297509)

Regarding claim 3, modified Ishikawa et al. teaches an edge face sealing member as set forth above.

Modified Ishikawa et al. does not teach lower sealing region is longer than upper sealing region.

Stein et al. teaches an edge face sealing member with a lower sealing region (or lower seal 26 as seen in figure 7) being longer than an upper sealing region (or upper seal 26 as seen in figure 7). It would have been obvious to one skilled in the art at the time the invention was made to modify the edge face sealing member of modified Ishikawa et al. by having a lower sealing region longer than the upper sealing region as taught by Stein et al., because Stein et al. teaches such known frame with seal would increase mechanical stability, protection against moisture and provide local fastening of the solar cell equipment (see col. 1 lines 9-15 of Stein et al.)

Yoshida et al. teaches an edge face sealing member (28 in figure 4) having a lower sealing region (or the lower horizontal portion of resin 28) being longer than an upper sealing region (or the upper horizontal portion of resin 28). It would have been obvious to one skilled in the art at the time the invention was made to modify the edge face sealing member of modified Ishikawa et al. by having a lower sealing region longer than the upper sealing region as taught by Yoshida et al., because Yoshida et al. teaches such seal (or resin 28) would improve waterproofness (See paragraph 0024 of Yoshida et al.).

10. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080) as applied to claims 1, 4-6, 14, 16-17 and 20 above, in view of Kataoka et al. (US Patent 6320115)

Regarding claims 7 and 15, modified Ishikawa et al. teaches a solar cell module having an edge face sealing member as set forth above.

Modified Ishikawa et al. does not specifically teach a solar cell module body comprising one or more light receiving front glass surfaces, one or more light-receiving-surface sealing resin layer comprising ethylene vinyl acetate, one or more solar cells, one or more back-surface sealing resin layers comprising ethylene vinyl acetate, and one or more weather resistant back-surface sealing films.

Kataoka et al. teaches that it is well known to have a solar cell module body (or solar cell module) comprising a light receiving front glass surface (103), one or more solar cells (or a photovoltaic element 101), sealing resin layers (102) of EVA (or ethylene vinyl acetate) covering light-receiving surface and back-surface of the photovoltaic element, a weather resistant back-surface sealing film (104). See figure 1 and col. 1 line 35 through col. 2 line 14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the solar cell module body as taught by Kataoka et al. into the solar cell module of modified Ishikawa et al., because Kataoka et al. teaches that the front glass surface (103) and the back surface sealing (104) would be protective layers, sealing resin (102) which is inexpensive and easy to handle would be used to prevent damaging of the photovoltaic element (101). (See col. 1 line 35 through col. 2 line 15)

Art Unit: 1795

11. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080) and further in view of Kataoka et al. (US Patent 6320115) as applied to claims 7 and 15 above, and further in view of Kirchmann et al. (US Patent 6073936)

Regarding claims 8-10, modified Ishikawa et al. discloses a solar cell module edge face sealing member as described in claim 7, wherein Ishikawa et al. teaches the edge face sealing member (or grading channel members 5) having elasticity (or elastically deformed – see col. 4 lines 22-32 and 44-54).

Modified Ishikawa et al. does not specifically teach that the material making up the edge face sealing member is elastomer resin; polypropylene or polystyrenic resins; or PP-EPDM or polystyrene-isoprene copolymer.

Kirchmann et al. teaches a sealing member made of SIS (e.g. an elastomer resin of polystyrene-isoprene blend), or EPDM/PP (an elastomer resin of polypropylenic resin). See col. 4 lines 4-16 or Kirchmann et al.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of modified Ishikawa et al. by using SIS or PP-EDPM as the sealing material as taught by Kirchmann et al.; because Kirchmann et al. teaches that it would provide a sealing with flexibility or elastic characteristic (See col. 3 lines 3-5 and col. 4 lines 4-16 of Kirchmann et al., and Ishikawa et al. suggests using material having elastic characteristic (See col. 4 lines 22-32 and 44-54 of Ishikawa et al.)

Art Unit: 1795

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080) and further in view of Kataoka et al. (US Patent 6320115) and Kirchmann et al. (US Patent 6073936) as applied to claims 8-10 above, and further in view of Kotani et al. (US Patent 5414030).

Regarding claims 11-13, modified Ishikawa et al. discloses an edge face sealing member as described in claim 9.

Modified Ishikawa et al. does not teach using additive such as magnesium silicate or ultraviolet-resistant agents.

Kotani et al. teaches using magnesium silicate to an elastomeric resin. (See col. 14 lines 39-68). Kotani et al. also teaches using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one skilled in the art at the time the invention was made to modify the member of modified Ishikawa et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because Kotani et al. teaches such additive and agent would improve weather resistance (See col. 13 lines 22-31 of Kotani et al.)

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of Meadows (US Patent 3455080)

Art Unit: 1795

as applied to claims 1, 4-6, 14, 16-17 and 20 above, and further in view of Stein et al. (US Patent 5071491).

Regarding claim 18, modified Ishikawa et al. teaches a solar cell module edge face sealing member as set forth above, wherein a pair of tongues extending inwardly from an interior surface of side wall portions 10.

The difference between modified Ishikawa et al. and instant claim is the requirement of the tip portions extending further inwardly than the projections (or tongues) from an interior surface of each of the upper sealing region and the lower sealing region.

Stein et al. teaches the tip portions of upper and lower seal 26 extending further than the other projections (See Figure 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the sealing of modified Ishikawa et al. by having the tip portions extending inwardly further than the projections as taught by Stein et al., because it would provide a frame that can serve as edge protection, local fastening, mechanical stability, and protection against moisture for solar cell equipment. (See col. 1 lines 9-15).

Response to Arguments

14. Applicant's arguments with respect to claims 1, 3-18 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Ishikawa's edge face sealing member (or grading channel members 5) itself is not an integral frame-like shaped because the

Art Unit: 1795

integral frame-like shape consists of one member. However, Applicant's argument is not deemed to be persuasive. First of all, there is no where in Applicant's specification defining integral consists of one member. On the contrary, the integral frame-like shape edge face sealing shown in Figure 1 includes four pieces connected together to form a frame (see the separating line at each corner of the frame). Secondly, by definition, integral is defined as "composed of integral parts" (see attached definition of "integral"). Ishikawa teaches the grading channel members 5 surrounding the solar cell body 4 to form a frame-like shape as seen in Figure 5, wherein each member fit to an edge of the solar cell body 4 (see col. 4 lines 13-54 of Ishikawa)

Applicant also argues that none of the members 5 seals an entire edge portion perimeter of the solar cell. However, Applicant's argument is moot in view of the new grounds of rejection. See the rejection above.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory

Art Unit: 1795

period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH-TRUC TRINH whose telephone number is (571)272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT
2/10/2010

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 1795